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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,990	04/26/2006	R. Andrew Hicks	DREX-1108US	4338

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KNOBLE, YOSHIDA & DUNLEAVY
EIGHT PENN CENTER
SUITE 1350, 1628 JOHN F KENNEDY BLVD
PHILADELPHIA, PA 19103

EXAMINER

VILLECCO, JOHN M

ART UNIT	PAPER NUMBER
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2622

MAIL DATE	DELIVERY MODE
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09/09/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/576,990	Applicant(s) HICKS, R. ANDREW	
	Examiner JOHN M. VILLECCO	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 2 and 4-12 is/are allowed.
- 6) ☒ Claim(s) 3, 13-17, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed June 22, 2009 have been fully considered but they are not persuasive with regards to claim 3. In particular, applicant argues that Stoltz fails to disclose:

- a. Repositioning the mirrors of the micromirror array to reflect a different set of pixels representing different locations of a scene; and
- b. Assembling the extracted color values of each reflected pixel, including the different sets of pixels into an image.

Applicant asserts that since the mirrors of Stoltz are only moveable between an "on" and "off" position, that they are incapable of reflecting different sets of pixels of an image. Thus, as applicant states, "a single mirror element 41 of Stoltz is incapable of reflecting different sets of pixels of an image".

The Examiner respectfully disagrees. The claim language merely states "positioning mirrors of a micromirror array to reflect a set of pixels representing locations of a scene". As mentioned in the previous office action, Stoltz discloses an embodiment (Figure 4) in which two pixels are addressed at the same time (two mirrors in the "on" position) and sends the reflected pixel to one of two sensors (15). The Examiner is interpreting the two reflected pixels being sent to the two different sensors as being the claimed "set". When capturing another "set" of pixels, the previous set of mirrors is turned "off" and the next "set" (group of two pixels) is reflected from two different micromirrors. Clearly when capturing the image, a different location of the scene would be directed by the next "set" of "on" micromirrors. Furthermore, the first set of

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micromirrors is repositioned to the "off" position, while the second "set" of micromirrors is repositioned to the "on" position to redirect the reflected light to the sensors (15). Finally, Stoltz discloses the use of a processor to assemble the output pixels. Thus, the Examiner maintains his position that Stoltz does disclose repositioning the mirrors of the micromirror array to reflect different sets of pixels representing different locations of a scene.

For the above reasons the rejections from the previous office action will be repeated.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 3, 13-17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoltz (U.S. Patent No. 5,212,555).**

4. Regarding *claim 3*, Stoltz discloses an image capturing device using a micromirror array for capturing an image. More specifically and as it relates to the applicant's claims, Stoltz discloses an embodiment (Figure 4) in which mirrors of a micromirror array (11) are positioned to reflect a set of pixels (step a; the set comprises the two pixels directed towards image sensors, 15a and 15b) representing locations of scene, photographing the set of reflected pixels with a photographing image systems (step b; image sensors, 15a and 15b), and repeating steps a and b at least once up to a sufficient number of times to provide an image of a desired resolution (the resolution of the captured image; 160x120; col. 5, line 42), and assembling the captured pixels

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into an image of the scene (using processor, 35). See column 5, lines 47-57. To further clarify, Stoltz discloses an embodiment (Figure 4) in which two pixels are addressed at the same time (two mirrors in the "on" position) and sends the reflected pixel to one of two sensors (15). The Examiner is interpreting the two reflected pixels being sent to the two different sensors as being the claimed "set". When capturing another "set" of pixels, the previous set of mirrors is turned "off" and the next "set" (group of two pixels) is reflected from two different micromirrors. Clearly when capturing the image, a different location of the scene would be directed by the next "set" of "on" micromirrors. Furthermore, the first set of micromirrors is repositioned to the "off" position, while the second set of micromirrors is repositioned to the "on" position to redirect the reflected light to the sensors (15). Finally, Stoltz discloses the use of a processor to assemble the output pixels.

Stoltz, however, fails to specifically disclose extracting color values from each reflected pixel in the embodiment shown in Figure 4. Stoltz does however, disclose a different embodiment capable of capturing a color image. See Figure 5 and col. 5, line 67 to column 6, line 5. Color images provide more context to an image. Therefore, it would have been obvious to one of ordinary skill in the art to enable the embodiment shown in Figure 4 of Stoltz to capture a color image as shown in Figure 5 so that a color image may be captured at high speed.

5. As for **claim 13**, since the system is capable of constructing an image, it is inherent that the extracted color values are correlated to corresponding locations of the scene. See column 5, lines 14-22.

6. Regarding **claim 14**, Stoltz discloses that each micromirror is moved in at least two different tilt directions. See column 5, lines 53-55.

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7. With regard to *claim 15*, Stoltz discloses capturing a series of frames for moving images.

Inherently, these images would have to be captured as some type of frame rate.

8. As for *claim 16*, Stoltz discloses that a 640X480 pixel image can be captured in 0.2 seconds. See column 5, lines 60-66.

9. Regarding *claim 17*, Stoltz discloses capturing 160x120 pixels. Thus, steps a-c would be performed more than 70 times.

10. As for *19 and 20*, as mentioned above in the discussion of claim 3, Stoltz discloses an embodiment in which R, G, and B colors are captured. See Figure 5.

Allowable Subject Matter

11. Claims 1, 2, 4-12 are allowed.

12. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, the primary reason for allowance is that the prior art fails to teach or reasonably suggest that each mirror is capable of tilting individually in at least two different directions to reflect different sets of pixels representing locations of the scene, said micromirror array being positioned with respect to the photographic imaging system so that the mirrors of the micromirror array transfer reflected pixels representing said locations of the scene to be photographed to the photographic imaging system, and an assembly system which forms a high resolution image by mosaicing extracted color values from each reflected pixel into a high resolution image.

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13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN M. VILLECCO whose telephone number is (571)272-7319. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JOHN M. VILLECCO/
Primary Examiner, Art Unit 2622
September 7, 2009